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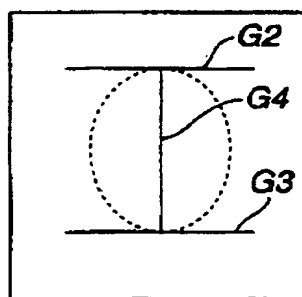
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(54) Abstract Title

Digital certification photograph system

(57) A digital certification photograph system capable of facilitating cutting of picture data used for a certification photograph while preventing a deterioration in quality of a picture. A head of a subject photographed by a picture pickup unit is displayed in the form of a picture on a display unit. A processing unit cuts data having the number of dots of $1/n$ (n : an integer) as many as that of original picture data and outputs it to a photograph output unit. The display unit overlap-displays, in the form of picture data, indications indicating a position of the head and a size thereof in conformity to the picture data outputted. The indications are prepared depending on a position of a head and a size thereof required for a certification photograph. Thus, a photograph for certification may be readily obtained by photographing a subject in conformity to the indications.

FIG.4



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FIG.1

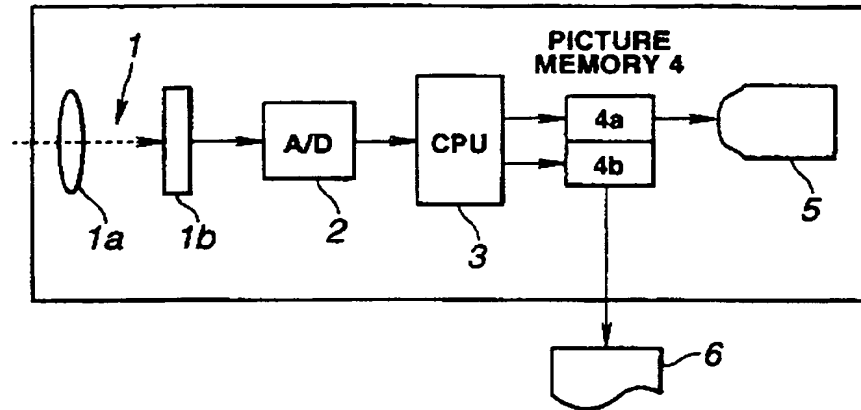


FIG.2

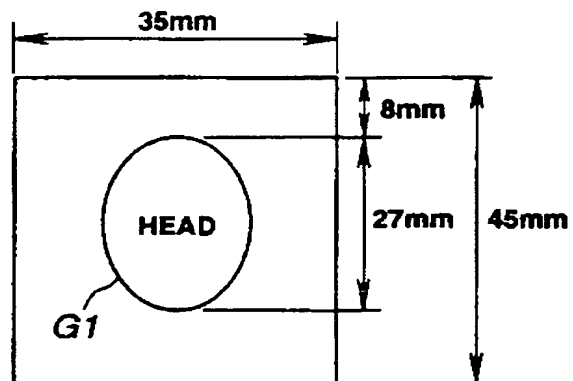


FIG.3

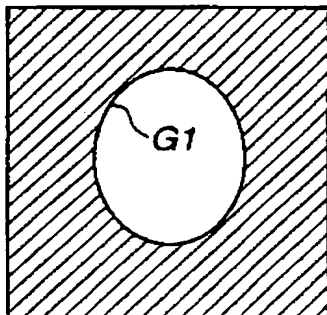


FIG.4

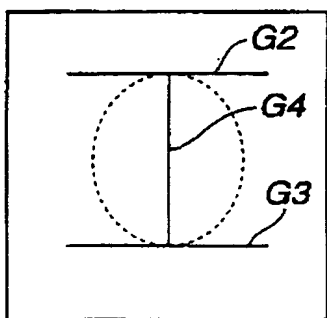


FIG.5(a)

0	0	0	0	0	0	0	0	0	0	0	0
1	1	0	0	0	0	0	0	0	0	0	0
1	1	1	1	0	0	0	0	0	0	0	0
1	1	1	1	1	1	0	0	0	0	0	0
1	1	1	1	1	1	1	1	0	0	0	0
1	1	1	1	1	1	1	1	1	1	0	0
1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1

FIG.5(b)

0	0	0	0	0
1	1	0.4	0	0
1	1	1	0.96	0.32
1	1	1	1	1
1	1	1	1	1

FIG.5(c)

0	0	0	0
1	1	0	0
1	1	1	1
1	1	1	1

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DIGITAL CERTIFICATION PHOTOGRAPH SYSTEM

This invention relates to a digital certification photograph system, and more particularly to a digital certification photograph system for cutting picture data of a desired range with respect to a whole range of picture data outputted in the form of a photograph based on digital picture data while preventing a deterioration in quality of the picture.

A digital photograph system using a digital still picture is so constructed that a picture which has been recorded on a silver salt film by silver salt photograph techniques is converted into an electric signal by a CCD or the like, resulting in being subject to digital conversion and then outputted from a printer. Thus, the digital photograph system permits the picture photographed to be confirmed immediately after the photographing without requiring operation in a dark room and facilitates additional printing of the photograph.

Also, the digital photograph system permits the picture to be edited and stored in the form of digital data, to thereby ensure construction of a data base for customers and the like and facilitate change of a background, change of a dress or the like.

A certification photograph generally has longitudinal and lateral dimensions determined or defined depending on applications thereof. In particular, in a certification photograph for a passport, a length of a head of a subject and a margin of the photograph above the head are defined as well. A certificate photograph for each of any other applications likewise has a size of the head defined to a degree. Thus, an excessively large or small size of the head of the subject on the photograph is not admitted.

In the conventional silver salt photograph techniques, it is required to adjust a size of a photograph when photographing or printing takes place.

When a negative film is used, enlargement of a photograph into a required size is carried out during printing onto a developing paper.

Such silver salt photograph techniques require operation

Simply, this means that 5 dots are prepared from 12 dots. Thus, as shown in Fig. 5(b), a part of the data fails to constitute a digital value (a binary value of 0/1) unless it is subject to any processing, leading to a deterioration in quality of the picture.

On the contrary, when the original picture data are cut by a size of $1/n$ (n : an integer) (for example, $1/3$) as many as a size of the original picture data as shown in Fig. 3(c), extraction of the picture data at every third interval eliminates a necessity of subjecting the digital value to interpolation or the like, to thereby keep the picture data from being deteriorated. The picture data cut which are shown in Fig. 5(c) are enclosed by each of frames on the original picture data shown in Fig. 5(a).

Also, in the certification photograph, it is required to render a size of the head uniform as described above. In addition, it is required to place the subject on a central axis of the photograph. However, designation of a rectangle cut fails to facilitate such adjustment.

The present invention has been made in view of the foregoing disadvantage of the prior art.

Accordingly, it is an object of the present invention to provide a digital certification photograph system which is capable of readily providing a cut range of picture data used for a certification photograph.

It is another object of the present invention to provide a digital certification photograph which is capable of preventing cutting of picture data from deteriorating quality of a picture.

In accordance with the present invention, a digital certification photograph system is provided. The digital certification photograph system includes a picture pickup means for picking up a picture of a head of a subject to output original picture data of a predetermined number of dots, a processing means for converting the original picture data into picture data having the number of dots of $1/n$ (n : an integer) as many as that of the original picture data in order to cut a part of the original picture data to output it, a display means for

displaying a state of photographing in the picture pickup means and overlap-displaying indications indicating a position of the head to be photographed and a size thereof so that the picture data outputted at the number of dots of $1/n$ satisfy conditions set for a certification photograph, and a photograph output means for outputting, in the form of a photograph, the picture data outputted from the processing means.

In a preferred embodiment of the present invention, the picture pickup means, processing means and display means are commonly arranged in a single casing.

In a preferred embodiment of the present invention, the display means is constituted by an electronic finder and the indications are picture data and overlap-displayed on the original picture data on the electronic finder.

These and other objects and many of the attendant advantages of the present invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings; wherein:

Fig. 1 is a schematic view showing an embodiment of a digital certification photograph system according to the present invention;

Fig. 2 is a view showing dimensions of a part of a certification photograph;

Fig. 3 is a view showing indications for determining a position of photographing;

Fig. 4 is a view showing indications for determining a position of photographing; and

Figs. 5(a) to 5(c) each are a view showing picture data of a predetermined number of dots.

Now, a digital certification photograph system according to the present invention will be described hereinafter with reference to the accompanying drawings.

Referring first to Fig. 1, an embodiment of a digital certification photograph system according to the present invention is illustrated. A digital certification photograph

system of the illustrated embodiment includes a picture pickup means 1 for picking up a picture of a subject to output picture data on the subject, which includes an optical lens 1a and a picture pickup element 1b such as a CCD or the like for outputting the picture data.

The picture data outputted from the picture pickup element 1b are subject to A/D conversion in an A/D converter 2 and then inputted to a processing means (CPU) 3.

The processing means 3 functions to store the picture data inputted thereto in a storage region 4a of a picture memory 4 and cut a part of the picture data as described hereinafter. During the cutting operation, the picture data stored in the storage region 4a of the picture memory 4 are displayed on a display means 5 such as an electronic finder or the like.

Also, the picture data cut are stored in an external output region 4b of the picture memory 4 and then outputted to a photograph output means 6 such as a printer or the like which permits the picture data to be outputted in the form of a photograph.

The above-described components other than the photograph output means 6 may be arranged in a single digital camera.

Now, the manner of operation of cutting the picture data by the digital certification photograph system of the illustrated embodiment will be described hereinafter.

In general, when picture data for one dot are prepared in relationship of $1/n$ (n being an integer, 1, 2, 3, . . .) after being cut from n dots of original picture data, a deterioration in quality of a picture is rendered less. In view of the picture data cut, the original picture data are dots n times as large as the picture data cut.

When a photograph size required is ultimately determined, a side of the picture data is determined on the basis of a dot pitch of the printer used in the photograph output means 6. When the certification photograph to be outputted is for a passport, dimensions of the photograph are defined to be 45 mm in longitudinal length or height H , 35 mm in lateral length or width W and 8 mm in margin T above a head as shown in Fig. 2.

The picture pickup means 1 such as a digital camera or

the like is preferably operated to provide a picture of a subject in a large size, because the picture obtained is increased in resolution while being less affected by the optical lens 1a or the like. Relationship between both provides data dimensions which minimize a deterioration in quality of the picture to provide an optimum value for framing during the photographing.

More specifically, supposing that the printer of the photograph output means 6 is 10 dots/mm in dot pitch thereof, dimensions of the printing data are 270 dots in length L of a head, 80 dots in margin T above the head, 450 dots in height H and 350 dots in width W.

Supposing that a digital camera which has original picture data of 1200 dots in lateral dimension and 1600 dots in longitudinal dimension inputted thereto is used, it is carried out to obtain n (n: an integer) which permits the above-described width W and height H to have the number of dots n times as large as that of the original picture data. In this instance, $n = 3$ is maximum (the width $W = 350 \times 3 = 1050$ dots < 1200 dots and the height $H = 450 \times 3 = 1350$ dots < 1600 dots), therefore, it is carried out to cut a range of 1050 dots in lateral dimension x 1350 dots in longitudinal dimension from the original picture data.

In this instance, photographing takes place so that a length L of the head is 810 dots ($= 270 \times 3$) and a margin T above the head is 240 dots ($= 80 \times 3$) or more.

Such original picture data are inputted to the processing means 3, so that the processing means 3 cuts the above-described range of 1050 dots x 1350 dots from the original picture data, followed by reduction of the cut original picture data range to $1/3$, which is then outputted to the photograph output means 6.

This results in the finder of the display means 5 displaying, in the form of a picture, an indication corresponding to the length L of the head. For example, as shown in Fig. 2, it may be carried out to overlap-display picture data of a frame line or contour G1 of an oval shape defined by connecting a top of the head and a jaw to each other. Alternatively, as shown in Fig. 3, it may be carried out to construct a region outside the contour G1 into a black frame and an inner region thereof into a

white frame. Instead, horizontal lines G2 and G3 may be displayed at the head top and jaw, respectively. Also, a vertical reference line G4 (Fig. 4) may be displayed in addition to the display shown in each of Figs. 2 and 3. Picture data for such overlap-displaying are previously stored in a predetermined region of the picture memory 4, so that the processing means 3 overlap-displays the picture data in combination with the original picture data.

In the illustrated embodiment constructed as described above, photographing of a subject is attained by merely positioning a head of the subject based on the indications displayed by the display means 5 and picking up a picture of the subject having a size indicated by the indication. This permits the picture to be formed into a size sufficient to minimize a deterioration in quality thereof during outputting thereof in the form of a photograph. Also, the photograph provided sufficiently meets conditions defined for the certification photograph such as a size of the head, a margin above the head and the like.

Also, photographing taking place in conformity to the indications permits the picture data to position the head at a fixed location, so that operation of cutting and arranging picture data then processed in the processing means 3 may be carried out according to a fixed procedure.

The above description has been made in connection with a certification photograph for a passport by way of example. The illustrated embodiment may be effectively applied to any certification photograph of a different size for a driving license or the like other than for a passport. In this instance, the indications displayed are varied depending on the size. The indications overlap-displayed may be readily changed over by using an electronic finder such as an LCD or the like for the display means 5. The indications are prepared in view of conditions for cutting the picture in the processing means 3 or in view of relationship of $1/n$ (n : an integer) as large as the number of dots of the original picture data, so that it is not required to change setting of cutting of the picture in the processing means 3.

It is a matter of course that the indications are not

limited to those for the picture data. For example, the indications may be constructed so as to overlap-display data formed on a transparent element on an optical finder. This is carried out by selecting any desired one of transparent elements formed thereon with indications different from each other for certification photographs depending on applications.

As can be seen from the foregoing, the digital certification photograph system of the present invention is so constructed that a size of a head of a subject and a position thereof required for a certification photograph are displayed in the form of indications on the display means. Such construction permits an operator to output a photograph for certification by merely picking up a picture of a subject while adjusting a position of a head of the subject and a size thereof depending on the indications.

Also, the picture data to be outputted are converted into the number of dots of $1/n$ (n : an integer) as large as that of the original picture data and then subject to cutting, resulting in a deterioration in quality of the picture being substantially prevented.

Thus, the present invention facilitates preparation of various certification photographs while eliminating restrictions such as layout during the photographing and facilitates edition after the photographing while eliminating any operation in a dark room.

While a preferred embodiment of the invention has been described with a certain degree of particularity with reference to the drawings, obvious modifications and variations are possible in light of the above teachings. It is therefore to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described.

Claims:

1. A digital certification photograph system, comprising: picture pickup means for picking up a picture of the head of a subject to output original picture data
5 of a predetermined number of dots; processing means for converting the original picture data into picture data having the number of dots of $1/n$ (n : an integer) as many as that of the original picture data in order to cut a part of the original picture data to output it; display
10 means for displaying a state of photographing in the picture pickup means and overlap-displaying indications indicating the position of the head to be photographed and its size so that the picture data outputted at the number of dots of $1/n$ satisfy conditions set for a certification
15 photograph; and photograph output means for outputting, in the form of a photograph, the picture data outputted from the processing means.
2. A digital certification photograph system as claimed
20 in Claim 1, in which the picture pickup means, processing means and display means are commonly arranged in a single casing.
3. A digital certification photograph system as claimed
25 in Claim 1, in which the display means is constituted by an electronic finder; and the indications are picture data and overlap-displayed on the original picture data on the electronic finder.
- 30 4. A digital certification photograph system, constructed and arranged substantially as herein specifically described with reference to and as shown in the accompanying drawings.



The Patent Office

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Claims searched: All

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Patents Act 1977 Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:
UK Cl (Ed.P): H4F(FAAG,FCP,FKC,FESK,FESX,FGG,FGS)
Int Cl (Ed.6): H04N(1/00,1/387,1/393,5/262,5/225,7/18);G06T(3/40)
Other: Online: WPI, EPODOC, PAJ

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
Y	US 5331419 (YAMADA ET AL) - see abstract and figure 21	1-3
Y	JP 7303250(KYOCERA CORP), 14.11.95, (see figure 3 and also WPI Abstract Accession No 96-028158)	1-3

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X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.